

The Mystery of Reebop Genetics

Reebops are small creatures that are commonly found in science classrooms. For years, science teachers have noticed that these gentle, shy animals seem to exhibit some strange anomalies in their genetic patterns. Your challenge is to figure out why these Reebops don't follow the normal Mendelian genetic patterns and what Mendelian laws they are violating.

Problem: Out of the 8 Reebop traits, how many do not follow Mendelian genetic laws and patterns?

Prediction:

A. Determining Reebop baby genotype

1. Turn the chromosomes face down on a table so that no letters are visible.
2. Sort the chromosomes by length, still keeping them apart by color. Each trait is on a different length chromosome.
3. Choose one chromosome of each length from mom and one from dad and set the selected pairs aside. **This illustrates which law of Mendel?** _____
4. The remaining chromosomes may be returned to your envelope.
5. Each Reebop baby should now have 12 chromosomes, 6 of each color. These are the 6 homologous pairs.
6. Identify the genotypes for each trait of your Reebop baby.

Trait	Genotype
Antenna	
Body segments	
Eyes	
Legs	
Hump	
Nose	
Tail	
Gender	

Key to Reebop Traits

GG = 2 large antennae
SS = 2 small antennae
GS = 1 small and 1 large antennae

3 body segments = DD or Dd
2 body segments = dd

Gold eyes = EE or Ee
Silver eyes = ee

Legs = BB or Bb or B
No legs = bb

1 green hump = MM or Mm
2 green humps = mm

red nose = QQ
orange nose = QQ'
yellow nose = Q'Q'

curly tail = TT or Tt (if female)
no tail = TT or Tt (if male)
straight tail = tt (male or female)

male = xy (one bead on tail)
female = xx (two beads on tail)

B. Reebop baby construction

1. Using the guide of Reebop traits above, construct your Reebop baby.
2. List the phenotypes of your Reebop baby.

Trait	Genotype	Phenotype
Type of Antennae		
# of Body Segments		
Color of Eyes		
Presence of Legs		
# of Humps		
Color of nose		
Type of tail		
Gender		

C. Reebop Genetics

Within these Reebop traits, there are 6 exceptions to Mendel's Laws. Identify these traits, the law they defy, and identify/define what concept they illustrate.

[illegible]